

What is claimed is:

1. A method by which a radio access network (16) coupled to a core network (18) monitors wireless transmission of packets according to a layered protocol, the radio access network (16) including equipment implementing a radio layer (12) and an upper layer (14) of the layered protocol, the radio layer (12) and the upper layer (14) distinguished at least in that the radio layer (12) receives data as packets from the upper layer (14) and prepares the data for transmission over the air by forming radio frames corresponding to the packets, the method characterized by:

a step (23) of slow release in which the upper layer (14) removes from a buffer maintained by the upper layer (14) the oldest packet in the buffer when the buffer is full and a new packet arrives, and does so independently of whether the oldest packet has been acknowledged by the radio layer (12) of the terminal; and

a step (24) of local acknowledgement in which the radio layer (12) sends a local acknowledgement to the upper layer (14) on the occurrence of a predetermined event.

2. A method as in claim 1, further characterized in that in the step (24) of local acknowledgement, the radio layer (12) includes with the local acknowledgement a sequence number.

3. A method as in claim 2, further characterized in that the upper layer (14) removes the packet in the buffer having a sequence number equal to the sequence number included with the local acknowledgement, and also removes all older packets in the buffer.

4. A method as in claim 1, further characterized in that the step (24) of local acknowledgment triggers special mode buffer

management by the upper layer (14) in which the step (23) of slow release is at least temporarily discontinued and steps (26) are performed in which packets are instead removed by the upper layer (14) whenever a subsequent local acknowledgement is received along with a sequence number, the upper layer (14) then removing the packet with the sequence number accompanying the local acknowledgement as well as all older packets.

5. A method as in claim 4, further characterized by a step (27) of returning to a normal-mode buffer management upon receiving a trigger-to-normal-mode local acknowledgment.

6. A method as in claim 5, wherein the trigger-to-normal-mode local acknowledgment is identified as such by the upper layer (14) on the basis of whether or not it includes a sequence number.

7. A method as in claim 5, wherein the trigger-to-normal-mode local acknowledgment is identified as such by the upper layer (14) on the basis of whether or not a flag it includes is set.

8. A method as in claim 7, wherein the local acknowledgment includes a sequence number.

9. A method as in claim 8, wherein the sequence number serves as a signal to the upper layer (14) to remove the packet with the sequence number as well as all older packets.

10. A method as in claim 7, wherein the local acknowledgment does not include a sequence number.

11. A method as in claim 5, wherein the trigger-to-normal-mode local acknowledgment is identified as such by the upper layer (14) on the basis of whether or not it is a different type of message than the local acknowledgment triggering special mode

buffer management.

12. A method as in claim 11, wherein the local acknowledgment includes a sequence number.

5 13. A method as in claim 12, wherein the sequence number serves as a signal to the upper layer (14) to remove the packet with the sequence number as well as all older packets.

14. A method as in claim 11, wherein the local acknowledgment does not include a sequence number.

10 15. A method as in claim 4, wherein the upper layer (14) does not remove packets from the buffer while in special mode unless the buffer is full.

16. A method as in claim 4, wherein the upper layer (14) uses a larger buffer while in special mode.

15 17. A method as in claim 4, further characterized in that the local acknowledgement is included with a handover trigger message.

18. A method as in claim 1, further characterized in that the step (24) of local acknowledgement signals to the upper layer (14) a release to a target of the buffer.

20 19. A computer program product comprising: a computer readable storage structure embodying computer program code thereon for execution by one or more computer processors in a radio access network (16), with said computer program code characterized in that it includes instructions for performing the steps of the
25 method of claim 1.

20. A radio access network (16) comprising equipment (12 14)

adapted to perform the method of claim 1.

21. A radio access network (16) coupled to a core network (18) of a wireless communication system, the radio access network (16) comprising elements for use in monitoring wireless
5 transmission of packets according to a layered protocol, the elements including equipment implementing a radio layer (12) and an upper layer (14) of the layered protocol, the radio layer (12) and the upper layer (14) distinguished at least in that the radio layer (12) receives data as packets from the upper layer
10 (14) and prepares the data for transmission over the air by forming radio frames corresponding to the packets, the radio access network (16) characterized in that:

the upper layer (14) performs buffer management according to either a normal mode (23) or a special mode (27) and in the
15 normal mode (23) the upper layer (14) performs a slow release procedure in which it removes from a buffer it maintains the oldest packet in the buffer when the buffer is full and a new packet arrives, and does so independently of whether the oldest packet has been acknowledged by the radio layer (12) of
20 the terminal; and

the radio layer (12) triggers (24) the upper layer (14) to perform buffer management according to the special mode (27) by sending a local acknowledgment to the upper layer (14) on the occurrence of a predetermined event.

22. A radio access network (16) as in claim 21, further characterized in that in triggering (24) buffer management according to the special mode (27), the radio layer (12) includes with the local acknowledgement a sequence number.

23. A radio access network (16) as in claim 21, further
30 characterized in that in special mode the upper layer (14) at least temporarily discontinues the slow release procedure and

instead removes packets from the buffer whenever a subsequent local acknowledgement is received along with a sequence number, the upper layer then removing the packet with the sequence number accompanying the local acknowledgement as well as all older packets.

24. A radio access network (16) as in claim 23, further characterized in that the radio layer (12) triggers the upper layer (14) to return to normal mode by providing to the upper layer (14) a trigger-to-normal-mode local acknowledgment.

25. A radio access network (16) as in claim 21, further characterized in that upon receiving the local acknowledgement, the upper layer (14) releases the buffer to a target entity instead of performing buffer management according to the special mode.

26. A wireless communication system, comprising a core network (18), a terminal (11), and a radio access network (16) according to claim 20 and communicatively coupling the terminal (11) to the core network (18).